

## ISD Inspections, Peer Reviews, and Walkthroughs

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**Approved By: (signature)**  
**Name:** Barbara Pfarr  
**Title:** Assoc. Chief, ISD

**Responsible Office:** 580/Information Systems Division (ISD)  
**Title:** Inspections, Peer Reviews, and Walkthroughs

**Asset Type:** Subprocess  
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### Purpose

The purpose of this document is to define a uniform process for conducting inspections, peer reviews, and walkthroughs in the Information Systems Division (ISD). Inspections, peer reviews, and walkthroughs all have a similar purpose: to provide qualified review and feedback on software work products. Throughout this subprocess, we shall use the single term "review" to include all three types of reviews.

*GUIDANCE: These terms are all used here according to their definitions in the [EPG/ISD Glossary](#). Inspections use visual examination of development products, especially design and code, to detect errors, violations of standards, and other problems. Peer reviews are examinations of work products by peers of the author to find and eliminate errors. (Note that a "peer review," as the term is used here, is only for peers; managers do not normally attend.) In walkthroughs, a designer or programmer leads developers and other interested parties through a segment of documentation and code; the participants ask questions and make comments, but the focus is more on education than specifically upon finding errors.*

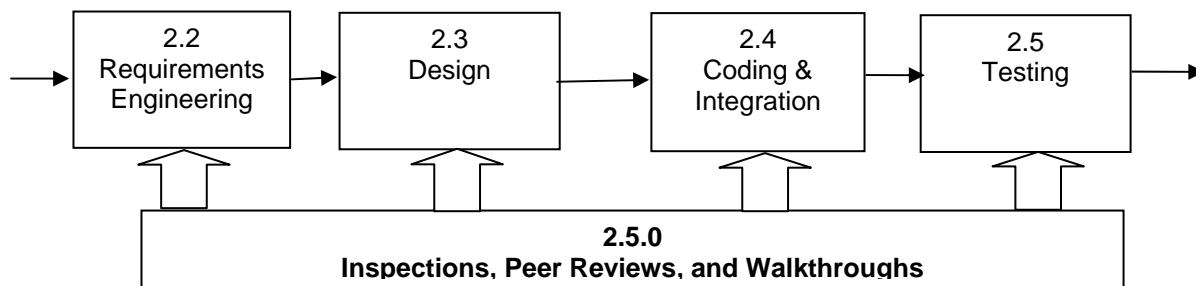
*It is recommended that projects prepare tailored forms and a standard "review package," which will serve as an archival record of each review.*

### Scope

This process is to be followed for all software reviews (i.e., inspections, peer reviews, or walkthroughs) conducted by ISD software projects, including those that provide support to Mission Projects. This process applies to software development and maintenance projects.

### Context Diagram

This is a sub-process of the Verification Process, and applies to specific Product Development processes, as shown below.



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**Roles and Responsibilities**

*GUIDANCE: All roles listed are members of the Product Development Team (PDT). Any member of the team may serve as moderator, after completing training on the proper conduct of reviews. If a team has only one member, someone from another team may participate as Moderator, Reviewer, etc.*

**Product Development Lead (PDL) or Maintenance Technical Lead (MTL)**

- Plans, schedules, and coordinates reviews within a software project

**Moderator (M) (sometimes called a review leader or facilitator)**

- Leads the review
- Ensures that action items for each work product reviewed are closed.

**Author (A)**

- Participates in a review of any work products that he or she developed
- Addresses all comments and action items from the review.
- Submits the completed work product to the Moderator for approval.

**Reviewer (R)**

*GUIDANCE: Typically, there should be 1-4 reviewers at a review (in addition to the other roles listed here). The Moderator and Scribe normally also serve as Reviewers. Managers do not normally serve as Reviewers. Reviewers should undergo some training in the proper conduct of reviews before serving in this role.*

- Reviews the work product(s) and provides comments either before or during the review

**Scribe (S)**

*GUIDANCE: When necessary, the Moderator or another reviewer may also serve as the Scribe.*

- Captures all comments and action items assigned during the review.

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**Usage Scenarios**

This sub-process is applied whenever a work product is ready for internal review by the PDT.

*GUIDANCE: For each product type, the software project's Software Management Plan/Product Plan (SMP/PP) identifies which type(s) of review will be performed: inspection, peer review, and/or walkthrough. Note that NPR 7150.2 requires either formal inspections or peer reviews of both requirements and test plans for all Class A and B software projects. Note also that this sub-process is applied only for internal reviews, not for formal reviews (e.g., PDR, CDR). These are defined in separate process assets.*

<b>Inputs</b>	<ul style="list-style-type: none"> <li>• Work product(s) to undergo a review (i.e., inspection, peer review, or walkthrough)</li> <li>• ISD or tailored Branch-level procedures, forms, and/or checklists, if any, for inspections, peer reviews, and/or walkthroughs</li> </ul>
<b>Entry Criteria</b>	<ul style="list-style-type: none"> <li>• Work product(s) are ready for review</li> <li>• Appropriate procedures and/or checklists are available</li> <li>• Participants are available.</li> </ul>
<b>Exit Criteria</b>	<ul style="list-style-type: none"> <li>• The review (inspection, peer review, or walkthrough) has been completed</li> <li>• All corrections have been made to the work product(s)</li> <li>• All action items from the review have been closed</li> <li>• The moderator has approved the work products and agreed that the review is complete.</li> </ul>
<b>Outputs</b>	<ul style="list-style-type: none"> <li>• Completed review package (includes review announcement, minutes of the review, list of action items, review data, and signoff sheet indicating review completion)</li> <li>• Approved work product(s).</li> </ul>
<b>Major Tasks</b>	<p>The following major tasks are generally executed sequentially:</p> <ol style="list-style-type: none"> <li>1. Organize and schedule review meeting. <b>(PDL, M, A)</b></li> <li>2. Prepare and distribute announcement of review meeting. <b>(M)</b></li> <li>3. Review the materials in advance and prepare comments. <b>(R)</b></li> <li>4. Conduct the review. <b>(M, R, S, A)</b></li> <li>5. At the conclusion of the review meeting, determine whether a re-review will be required. <b>(M)</b></li> <li>6. Following the review meeting, perform any necessary rework. <b>(A)</b></li> <li>7. Approve the work product(s) and close the review. <b>(M)</b></li> <li>8. Assemble the review package and store it in the repository. <b>(M, A)</b></li> </ol>
<b>Task 1:</b>	<p><b>Organize and schedule review meeting.</b></p> <p><i>GUIDANCE: Reviews, especially for major work products, are frequently scheduled well in advance. The actual announcement of the review is sent out shortly before the review meeting</i></p> <ol style="list-style-type: none"> <li>a) Consult the SMP/PP to determine what type of review is appropriate for the work product(s). <b>(PDL)</b></li> <li>b) Identify appropriate participants. <b>(M, A)</b></li> <li>c) Schedule review meeting and reserve meeting room. <b>(M, A)</b></li> <li>d) Notify participants, assign key roles, and ask for confirmation of attendance. <b>(M)</b></li> </ol>

<b>Task 2:</b>	<p><b>Prepare and distribute announcement of review meeting. (M)</b></p> <ul style="list-style-type: none"> <li>a) Prepare review announcement, including list of participants (with their assigned roles), list of work products to be reviewed, date, time, and place.</li> <li>b) Verify that work product(s) and other materials are complete and ready for review.</li> <li>c) At least three business days before the scheduled review, distribute review announcement, copies of work products to be reviewed, and any related materials (or links to the appropriate files), to all participants.</li> </ul>
<b>Task 3:</b>	<p><b>Review the materials in advance and prepare comments. (R)</b></p> <p><i>GUIDANCE: If the Moderator and/or Scribe are also serving as Reviewers, then they too need to perform this task. This task is generally not performed for walkthroughs, which are intended primarily to educate the participants, more than to identify defects.</i></p> <ul style="list-style-type: none"> <li>a) Review the work product(s) and associated materials.</li> <li>b) Search for possible errors or defects in the work product(s).</li> <li>c) Prepare a list of the identified errors or defects and suggestions for improvement.</li> <li>d) Complete the standard checklist for the specific review.</li> <li>e) Keep a record of how much time was spent preparing for the review.</li> </ul>
<b>Task 4:</b>	<p><b>Conduct the review.</b></p> <ul style="list-style-type: none"> <li>a) Determine whether everyone is ready to proceed with the review; if not, cancel and reschedule. <b>(M)</b></li> </ul> <p><i>GUIDANCE: The decision whether or not to proceed should be based on satisfaction of the Entry Criteria and completion of Tasks 1-3 above. In particular, for an inspection or peer review, verify that the participants have reviewed the work product(s) and prepared their comments. This decision does not usually apply to walkthroughs, which are generally conducted to educate the participants about the work product(s).</i></p> <ul style="list-style-type: none"> <li>b) Review the work product(s). <b>(M, R, S, A)</b></li> <li>c) Capture agreed-upon errors, defects, comments, and action items. <b>(S)</b></li> </ul> <p><i>GUIDANCE: Any action items that come up during the review meeting but do not affect the work product itself should be captured, assigned, and tracked separately, apart from the review. Such action items do not need to be completed in order to close the review.</i></p> <ul style="list-style-type: none"> <li>d) Complete a consensus checklist for the review. <b>(S)</b></li> </ul> <p><i>GUIDANCE: This consensus checklist becomes part of the review package, which is maintained as a historical record of the review.</i></p> <ul style="list-style-type: none"> <li>e) Capture the required measures for the review meeting (participant list, preparation time, meeting time, number of defects found, etc.) <b>(M)</b></li> </ul>
<b>Task 5:</b>	<p><b>At the conclusion of the review meeting, determine whether a re-review will be required. (M)</b></p> <ul style="list-style-type: none"> <li>a) Determine whether a re-review will be required.</li> <li>b) If so, schedule the re-review.</li> </ul>

*GUIDANCE: A re-review is indicated if the Moderator feels that substantial changes – typically over 20% of the work product – will be required. Once a work product has been reviewed, any re-review should address only the changes subsequent to the initial review. Re-reviews are generally used only for peer reviews and inspections, not for walkthroughs.*

- Task 6:**                    **Following the review meeting, perform any necessary rework. (A)**
- a) Correct the work product(s) in accordance with the comments or action items captured.
  - b) Submit the completed rework to the Moderator for approval.

- Task 7:**                    **Approve the work product(s) and close the review. (M)**
- a) Examine the completed work product(s), including any rework that was performed.
  - b) If the work product action items have been addressed satisfactorily, approve the work product(s).

- Task 8:**                    **Assemble the review package and store it in the repository. (M, A)**
- a) Gather the required records from the review.
  - b) Store them in the repository defined for them in the SMP/PP.

- Measures**
- Collection of the Measures listed below, which are specified in NPR 7150.2, is required for Class A and B software projects. It is recommended for Class C and other software projects. Report these measures for every review – inspection, peer review, or walkthrough:
- a. Identification information (including item being inspected, inspection type (e.g., requirements inspection, code inspection, etc) and inspection time and date).
  - b. Summary on total time expended on each inspection/peer review (including total hour summary and time participants spent reviewing the product individually).
  - c. Participant information (including total number of participants and participant's area of expertise).
  - d. Total number of defects found (including the total number of major defects, total number of minor defects, and the number of defects in each type (such as accuracy, consistency, completeness, etc.)).
  - e. Inspection results summary (i.e., pass, re-inspection required).
  - f. Listing of all inspection defects.

**Templates**

Name	Description
EPG PAL #2.3.1.3, "Design Inspection/Walkthrough Checklist"	Provides a checklist for design-level inspections
EPG PAL #2.4.2.1, "Code Inspection Checklist"	Provides a checklist for code-level inspections

Training	Course Name	Description
	"Software Inspections," NASA Class # HQ003	One-day class on the conduct of software inspections. Prepared and taught by Forrest Shull.

## References

List of all relevant resource documents for this process:

- NPR 7150.2, "NASA Software Engineering Requirements," NASA, September 27, 2004.
- **Glossary:** <http://software.gsfc.nasa.gov/glossary.cfm>  
Defines common terms used in ISD process assets  
*See especially definitions of Inspection, Peer Review, and Walkthrough*
- **Process Asset Library:** <http://software.gsfc.nasa.gov/process.cfm>

Note that the peer reviews discussed in this subprocess (and in NPR 7150.2) are **not** the same peer reviews that are discussed in GPR 8700.6A, "Engineering Peer Reviews," January 26, 2005. That GPR is not relevant to this process asset.

## Quality Management System Records

List of all QMS records for this process:

Controlled Document/Description	Record Custodian
Review package for each review	PDL/MTL

## Change History

Version	Date	Description of Improvements
1.0	4/24/06	Initial version approved by CCB
	8/8/07	PAL number corrected.